Attorney Docket No.: BD1 CIP FWC IV

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Applicants	:	Sherie L. Morrison, et al.
Serial No.	:	08/266,154
Filed	:	June 27, 1994
For	:	RECEPTORS BY DNA SPLICING AND EXPRESSION
Art Unit	:	1806
Examiner	:	Julie E. Reeves, Ph.D.

January 19, 1998

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

RESPONSE TO OFFICE ACTION

Sir:

In accordance with the telephone interviews with the Examiner, kindly amend the application as follows:

IN THE SPECIFICATION

For clarity and pursuant to the Examiner's request, applicants repeat the request made in the June 27, 1994 Request For Filing A Rule 62 Continuing Application

regarding amending the recitation of related U.S. applications. Specificaly, please delete the first line of the specification and replace it with the following sentence:

This is a continuation of application Serial No. 07/893,610, filed June 3, 1992, now abandoned which is a continuation of application Serial No. 07/675,106, filed March 25, 1991, now abandoned which is a continuation of application Serial No. 07/441,189, filed November 22, 1989, now abandoned which is a continuation of application Serial No. 07/090,669, filed August 28, 1987, now abandoned which is a continuation-in-part of application Serial No. 06/644,473, filed August 27, 1984, now abandoned.

Please delete the current Abstract of the Disclosure and replace it with the following Abstract:

Methods for producing functional immunoglobulin are provided. The methods involve transfecting and expressing exogenous DNA coding for the heavy and light chains of immunoglobulin. In some embodiments, chimeric immunoglobulins are provided having variable regions from one species and constant regions from another species by linking DNA sequences encoding for the variable regions of the light and heavy chains from one species to the constant regions of the light and heavy chains respectively from a different species. Introduction of the resulting genes into mammalian host cells under conditions for expression provides for production of chimeric immunoglobulins having the specificity of the variable region derived from a first species and the physiological functions of the constant region from a different species.

IN THE CLAIMS

Please cancel all pending claims (claims 43, 44, 46, 48, 60, 61, 63, 65, 71, 72, 74, 76, and 78-95) and add the following claims which are identical in content, but have been renumbered and re-ordered in accordance with the Examiner's request*:

~~96.~~ A method for producing a functional immunoglobulin comprising a heavy chain and a light chain, which comprises the steps of:

(a) transfecting a transformed mammalian lymphocytic cell with a first DNA molecule coding for a first chain of the immunoglobulin;

(b) transfecting the cell with a second DNA molecule, said second DNA molecule coding for a second chain of the immunoglobulin, said second chain being a chain other than the first chain and said first and second chains being either the heavy chain or the light chain; and

(c) maintaining the cell in a nutrient medium, so that the cell expresses the first and second DNA molecules and the resultant chains are intracellularly assembled together to form the immunoglobulin which is then secreted in a form capable of specifically binding to antigen

wherein prior to step (a) the cell does not express a functional immunoglobulin capable of specifically binding antigen.

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* For the Examiner's convenience, a copy of the fully amended cancelled claims is attached, with the new claim numbers indicated thereon (it is substantially similar to the renumbered, re-ordered copy included by the Examiner in the last Office Action.)

97. A method as recited in claim 96 wherein the cell is transfected via protoplast fusion.

98. A method as recited in claim 96 wherein the cell is transfected via calcium phosphate precipitation.

99. A method as recited in claim 96 wherein the cell is a myeloma cell.

100. A method as recited in claim 99 wherein the cell is a murine myeloma cell.

101. A method as recited in claim 96 wherein the cell does not endogenously produce any immunoglobulin chains.

102. A method as recited in claim 101 wherein the cell is a murine P_3 cell.

103. A method as recited in claim 96 wherein prior to step (a) the cell endogenously produces an immunoglobulin light chain or an immunoglobulin heavy chain, but not both.

104. A method as recited in claim 103 wherein the cell is a murine J558L cell.

105. A method as recited in claim 96 wherein the immunoglobulin comprises the variable region found in a first mammalian species and comprises the constant region found in a second mammalian species, said second mammalian species being other than the first mammalian species.

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106. A method for producing a functional immunoglobulin comprising a heavy chain and a light chain, which comprises the steps of:

(a) transfecting a transformed mammalian lymphocytic cell with a plasmid comprising a first DNA molecule coding for a first chain of the immunoglobulin and a second DNA molecule coding for a second chain of the immunoglobulin, said second chain being a chain other than the first chain and said first and second chains being either the heavy chain or the light chain; and

(b) maintaining the cell in a nutrient medium so that the cell expresses said first DNA molecule and said second DNA molecule and the resultant chains are intracellularly assembled together to form the immunoglobulin which is then secreted in a form capable of specifically binding to antigen

wherein prior to step (a) the cell does not express a functional immunoglobulin capable of specifically binding antigen.

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107. A method as recited in claim 106 wherein the cell is transfected via protoplast fusion.

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108. A method as recited in claim 106 wherein the cell is transfected via calcium phosphate precipitation.

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109. A method as recited in claim 106 wherein the cell is a myeloma cell.

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110. A method as recited in claim 109 wherein the cell is a murine myeloma cell.

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111. A method as recited in claim 106 wherein the cell does not endogenously produce any immunoglobulin chains.

112. A method as recited in claim 111 wherein the cell is a murine P_3 cell.

113. A method as recited in claim 106 wherein prior to step (a) the cell endogenously produces an immunoglobulin light chain or an immunoglobulin heavy chain, which endogenously-produced heavy chain is not secreted in a form capable of specifically binding to antigen, but not both.

114. A method as recited in claim 113 wherein the cell is a murine J558L cell.

115. A method as recited in claim 106 wherein the immunoglobulin comprises the variable region found in a first mammalian species and comprises the constant region found in a second mammalian species, said second mammalian species being other than the first mammalian species.

116. A method for producing a functional immunoglobulin comprising a heavy chain and a light chain which comprises the steps of:

(a) maintaining in a nutrient medium a transformed mammalian lymphocytic cell, said cell having been transfected with a first DNA molecule coding for a first chain of the immunoglobulin and a second DNA molecule coding for a second chain of the immunoglobulin, said second chain being a chain other than the first chain and said first and second chains being either the heavy chain or the light chain;

(b) expressing from said cell the heavy chain and the light chain functionally assembled together to form said immunoglobulin which is then secreted in a form capable of binding antigen; and

(c) recovering said immunoglobulin wherein prior to being transfected, the cell does not express a functional immunoglobulin capable of specifically binding antigen.

22 ~~117.~~ A method as recited in claim ~~116~~ 21 wherein the cell is transfected via protoplast fusion.

23 ~~118.~~ A method as recited in claim ~~116~~ 21 wherein the cell is transfected via calcium phosphate precipitation.

24 ~~119.~~ A method as recited in claim ~~116~~ 21 wherein the cell is a myeloma cell.

25 ~~120.~~ A method as recited in claim ~~119~~ 24 wherein the cell is a murine myeloma cell.

26 ~~121.~~ A method as recited in claim ~~116~~ 21 wherein the cell does not endogenously produce any immunoglobulin chains.

27 ~~122.~~ A method as recited in claim ~~121~~ 26 wherein the cell is a murine P_3 cell.

28 ~~123.~~ A method as recited in claim ~~116~~ 21 wherein prior to being transfected the cell endogenously produces an immunoglobulin light chain or an immunoglobulin heavy chain, but not both.

29 ~~124.~~ A method as recited in claim ~~123~~ 28 wherein the cell is a murine J558L cell.

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~~125~~. A method as recited in claim ~~116~~ wherein the immunoglobulin comprises the variable region found in a first mammalian source and comprises the constant region found in a second mammalian species, said second mammalian species being other than the first mammalian species.

REMARKS

Applicants have been advised by the Examiner that the pending November 18, 1997 Office Action was issued before the November 6, 1997 Second Supplemental Amendment reached the Examiner. Applicants have been further advised that the Second Supplemental Amendment has now been entered and that the amended claims are in condition for allowance. Accordingly, applicants do not herein address the rejections in the pending action as they are understood to be moot.

In accordance with the Examiner's request, applicants have amended both the abstract and the recitation of applications in the chain leading to the present application. Applicants have reviewed the Examiner's suggested claim renumbering, and have amended the claims accordingly.

Applicants thank Examiner Reeves for her professionalism and cooperation in the preparation of this application for prompt issue.

If the Examiner has any questions concerning this application, applicants request that the Examiner telephone the undersigned attorney at (415) 617-4011.

Respectfully submitted,

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